ORDER NO. ARD81100094C8-05

Service Manual

Mini Cassette

RQ-353

(Carib Blue)

Mini Cassette Recorder with
Full Auto-Stop and Tape Counter

This is the Service Manual for the following areas.
[D] ····· For all European areas. (Only for commodities of non-included AC Adaptor type)
[E] ····· For all European areas. (Only for commodities of included AC Adaptor type)
[A] ····· For Australia.

RQ-335 MECHANISM SERIES

Specifications

Power requirement:	Battery; 6 V (four R-6, UM-3 size dry batteries)
	[E] ··· AC; with AC adaptor RD-9477, included
	Car/boat battery; with optional car/boat adaptor RP-917
Motor:	Electrical governor motor
Power output:	600 mW ··· RMS (max.)
Frequency range:	80 — 10,000 Hz
Tape speed:	4.8 cm/s
Track system:	2-track monaural recording and playback
Fast forward and rewind time:	Approx. 140 seconds with C-60 cassette tape
Jacks:	Mic; sensitivity 0.25 mV/applicable microphone impedance 200Ω — 600Ω
	DC in; 6 V
	Monitor; 8Ω
	Remote; for start and stop at hand
Speaker:	4.5 cm PM dynamic speaker
Dimensions:	92.0 mm(W) × 145.0 mm(H) × 36.0 mm(D)
Weight:	430 g, without batteries

Specifications are subject to change without notice.

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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Jacks:	Mic; sensitivity 0.25 mV/applicable microphone impedance 200Ω – 600Ω
	DC in; 6 V
	Monitor; 8Ω
	Remote; for start and stop at hand
Speaker:	4.5 cm PM dynamic speaker
Dimensions:	92.0 mm(W) × 145.0 mm(H) × 36.0 mm(D)
Weight:	430 g, without batteries

Specifications are subject to change without notice.

Panasonic

Matsushita Electric Trading Co., Ltd.
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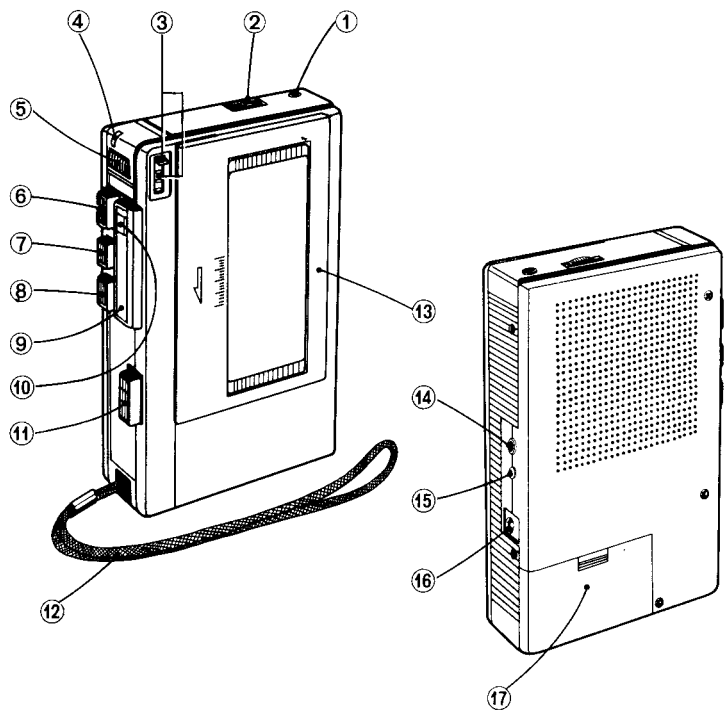
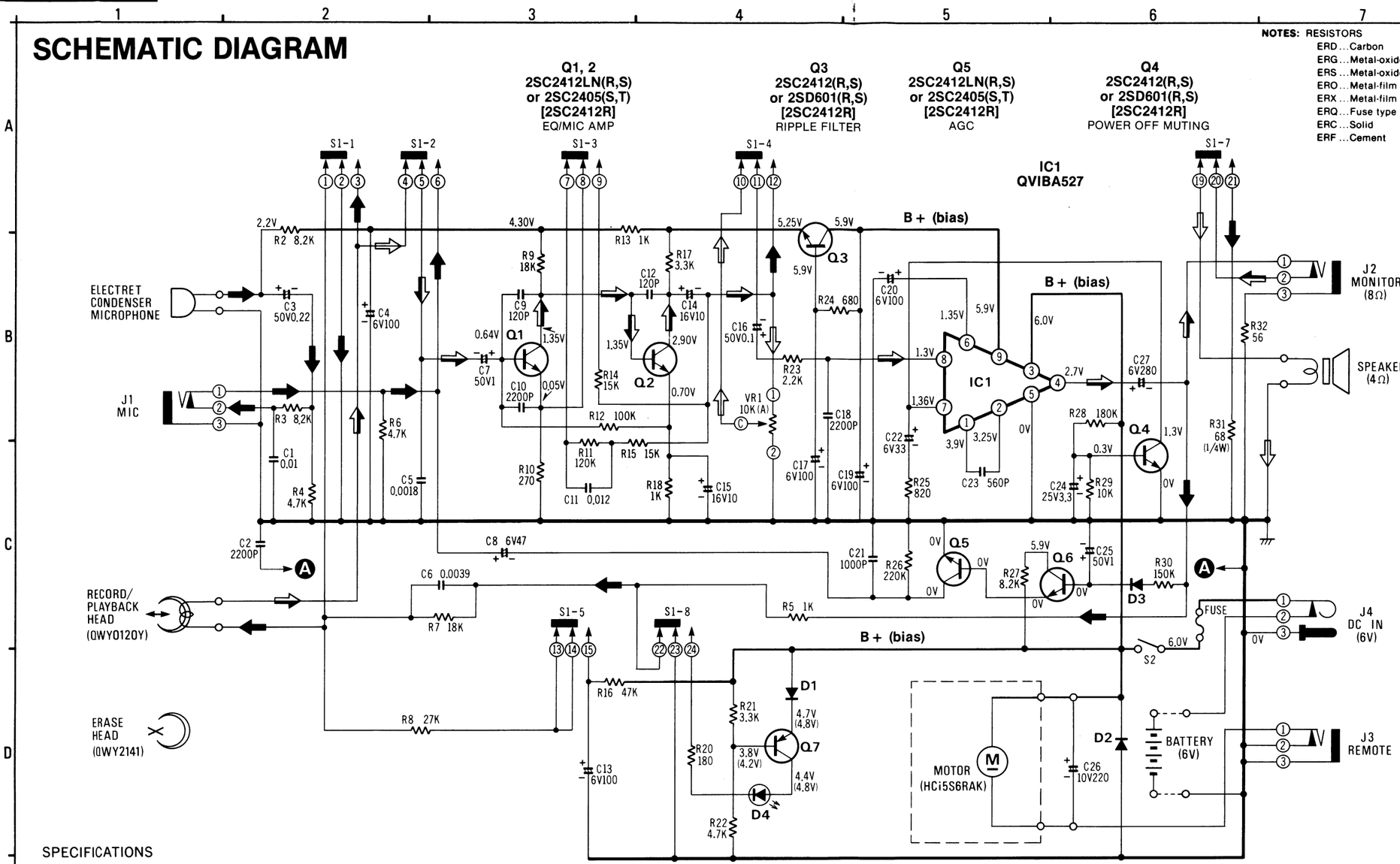
LOCATION OF CONTROLS AND COMPONENTS



① **Monitor jack [MONITOR (8Ω)]**
② **Volume control (VOLUME)**
③ **Tape counter and reset button**
④ **Recording indicator/ Battery-check lamp (REC/BATT)**
⑤ **Built-in microphone**
⑥ **Stop button (STOP) (■)**
⑦ **Rewind/review button (REW/REVIEW) (▶▶)**
⑧ **Fast forward/cue button (FF/CUE) (◀◀)**
⑨ **Play button (PLAY) (◀)**
⑩ **Record button (REC)**
⑪ **Eject/Pause button (EJECT/PAUSE) (▲ II)**
⑫ **Hand strap**
⑬ **Cassette compartment cover**
⑭ **Microphone jack (MIC)**
⑮ **Remote-control connection jack (REMOTE)**
⑯ **Car adaptor connection jack (DC IN 6 V) (⊖-◇-⊕)**
⑰ **Battery compartment**

SCHEMATIC DIAGRAM



NOTES: RESISTORS
ERD ...Carbon
ERG ...Metal-oxide
ERS ...Metal-oxide
ERO ...Metal-film
ERX ...Metal-film
ERQ ...Fuse type metallic
ERC ...Solid
ERF ...Cement

CAPACITORS
ECBA .....Ceramic
ECG□.....Ceramic
ECKD.....Ceramic
ECCD.....Ceramic
ECFD.....Ceramic
QCUT .....Ceramic
ECQM.....Polyester film
ECQE .....Polyester film
ECQF .....Polypropylene
ECE□ .....Electrolytic
ECE□N ...Non polar electrolytic
ECQS .....Polystyrene
ECSD .....Tantalum
QCS .....Tantalum

CHIP RESISTORS
RRD .....Carbon

CHIP CAPACITORS
QCU□.....Ceramic
ECSE .....Tantalum

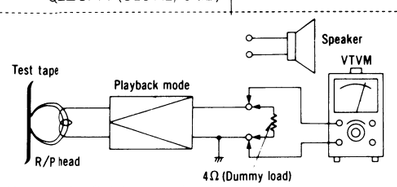
REPLACEMENT PARTS LIST

Ref. No.	Part No.
RESISTORS	
R2, 3	RRD18XJ822
R4	RRD18XJ472
R5	RRD18XJ102
R6	RRD18XJ472
R7	RRD18XJ183
R8	RRD18XJ273
R9	RRD18XJ183
R10	ERD10TJ27'
R11	RRD18XJ124
R12	RRD18XJ104
R13	RRD18XJ102
R14, 15	RRD18XJ153
R16	RRD18XJ470
R17	RRD18XJ332
R18	RRD18XJ102
R20	RRD18XJ181
R21	RRD18XJ332
R22	RRD18XJ472
R23	RRD18XJ222
R24	RRD18XJ681
R25	RRD18XJ821
R26	RRD18XJ224
R27	RRD18XJ822
R28	RRD18XJ184
R29	RRD18XJ103
R30	RRD18XJ154
R31	ERD25FJ680
R32	RRD18XJ560
CHIP JUMPER	
JP1, 2, 3, 4, 5	RRD18XK000
VARIABLE RESISTOR	
VR1	EVLEAAT12A14
CAPACITORS	
C1	QCUT1H103KRL
C2	QCUT1H222KRL
C3	ECEA1HKR22
C4	ECEA0JK101
C5	QCUT1H182KRL
C6	QCUT1H392KRL
C7	ECEA1HK010
C8	ECEA0JK470
C9	QCUT1H121KRL
C10	QCUT1H222KRL
C11	QCUT1H123KRL
C12	QCUT1H121KRL
C13	ECEA0JK101
C14, 15	ECEA1CK100
C16	ECEA1HK0R1
C17	ECEA0JK101
C18	QCUT1H222KRL
C19, 20	ECEA0JK101
C21	QCUT1H102KRL
C22	ECEA0JK330
C23	QCUT1H561KRL
C24	ECEA1EK3R3
C25	ECEA1HK010
C26	ECEA1AS221
C27	ECEA0JV281
TRANSISTORS	
Q1, 2, 3, 4, 5, 6	2SC2412R
Q7	2SA1037R
DIODES & RECTIFIERS	
D1	MA27W
D2	SM112
D3	MA161
D4	SLB22R3
INTEGRATED CIRCUIT	
IC1	QVIBA527

Ref. No.	Part No.	Part Name & Description
	SWITCHES	
S1	QSS8206	Slide Switch (Record/Playback Selector)
S2	QSB0255	Leaf Switch (Power ON/OFF)
	JACKS	
J1, 2	QJA0175	Microphone/Monitor Jack
J3	QJA0176	Remote Control Jack
J4	QJA0177	DC IN Jack

SPECIFICATIONS

Standard recording input level	1 kHz: MIC: −72±4 dB
Overall frequency response	150 Hz: −3±5 dB 1 kHz: 0 dB 6 kHz: −5±6 dB
Playback output level * Use test tape ··· QZZCFM (315 Hz, 0 dB)	More than 1.4 V



Notes: 1. Cut the speaker lead wire.
2. Connect 4 Ω instead of speaker.

Q7
2SA1037(R,S)
or 2SB709(R,S)
[2SA1037R]
LED DRIVE

D4 **SLB22R3**

D1 **MA27W**

Q6
2SC2412(R,S)
or 2SD601(R,S)
[2SC2412R]
AGC

D2
1SR35200
[SM112]

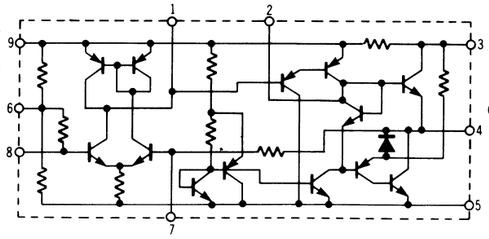
D3
1S2473
or MA150
[MA161]

NOTES:
- S1-1–S1-8 .....Record/playback select switch (shown in playback position).
- S2.....Power ON/OFF switch (shown in OFF position).
- VR1 .....Volume control.
- Resistance are in ohms (Ω), 1/8 watt unless specified otherwise. K = 1,000Ω.
- Capacity are in microfarads (μF) unless specified otherwise. P = Pico-farads.
- All voltage value shown in circuitry are under no signal condition and record mode with volume control at minimum position. However, the voltage in playback mode is indicated in ( ) when it differs from that in record mode. For measurement, use VTVM.
- (⇨) this arrow indicates the flow of the playback signal.
- (➡) this arrow indicates the flow of the recording signal.
- (⇨) this arrow indicates the flow of the playback and recording signal in combination.

- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.
  e.g. **Q1**
  2SC2412LN(R,S)—Production parts number
  or 2SC2405(S,T)
  [2SC2412R]—Supply parts number
  D2
  1SR35200—Production parts number
  [SM112]—Supply parts number
- **The supply parts number is described alone in the replacement parts list.**
- **This schematic diagram may be modified at any time with the development of new technology.**

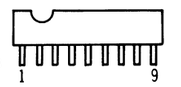
EQUIVALENT CIRCUIT

IC1 BA527



TERMINATIONS (Side View)

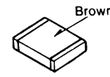
IC1



CHIP TRANSISTORS
Q1—7

CHIP RESISTORS

CHIP CAPACITORS



DISASSEMBLY INSTRUCTIONS

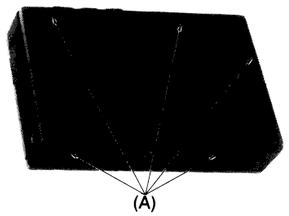


Fig. 1

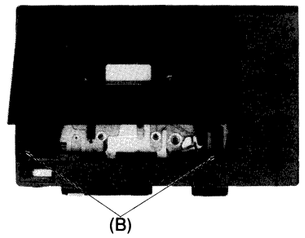


Fig. 2

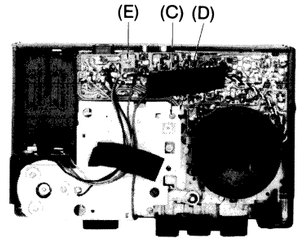


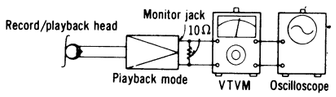
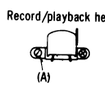
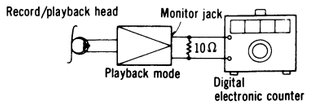
Fig. 3

Procedure	To remove —— .	Remove —— .	Shown in fig. —— .
1	Bottom case assembly	• 5 black screws ····· (A)	1
2	Main case assembly	• 2 black screws ····· (B)	2
3	Main circuit board	• 1 screw ····· (C) • P.C.B. holding plate ····· (D) • 1 screw ····· (E)	3 3 3

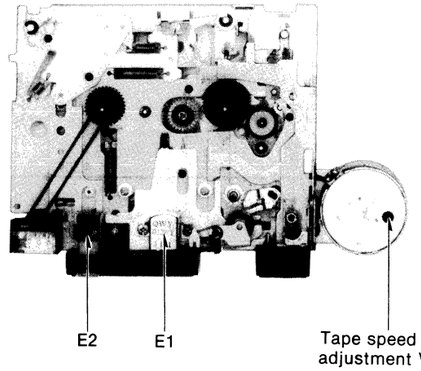
MEASUREMENT AND ADJUSTMENT METHODS

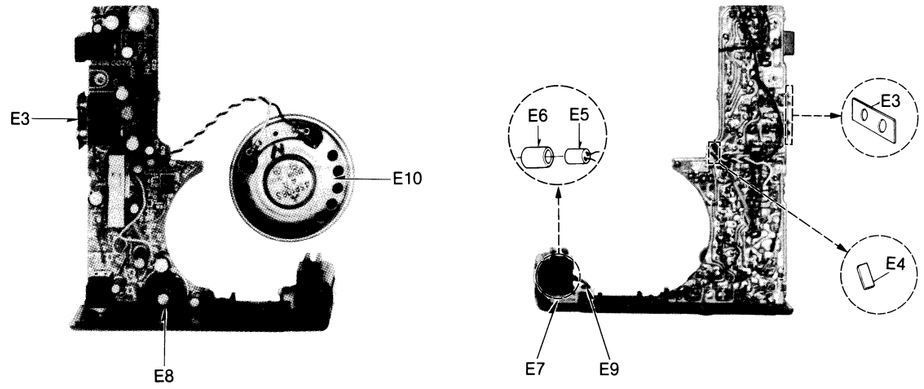
NOTES:

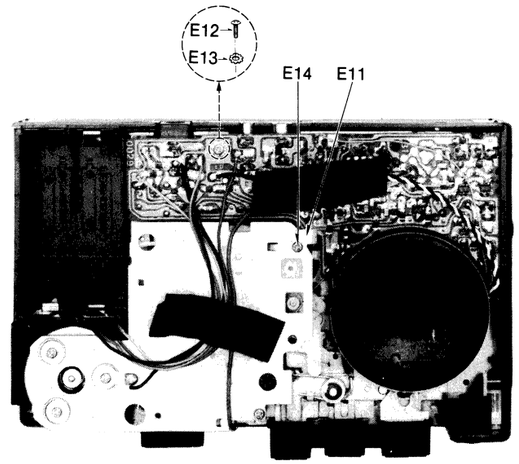
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20±5°C (68±9°F)
- Volume control: Maximum

ITEM	MEASUREMENT & ADJUSTMENT
Head azimuth adjustment Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape (azimuth) ··· QZZCFM * Resistor (10Ω)	1. Test equipment connection is shown in fig. 1. 2. Playback azimuth tape (QZZCFM 8kHz). 3. Adjust record/playback head angle adjustment screw (A) in fig. 2 so that output level becomes maximum. 4. After adjustment lock head adjustment screw with lacquer.  Fig. 1  Fig. 2
Tape speed accuracy adjustment Condition: * Playback mode Equipment: * Digital electronic countor or frequency counter * Test tape ··· QZZCWAT * Resistor (10Ω)	**Tape speed accuracy** 1. Test equipment connection is shown in fig. 3. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Take measurement at middle section of test tape. 4. Measure this frequency. 5. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3{,}000}{3{,}000} \times 100\ (\%)$ where, f = measured value **Standard value: ±2.5%** 6. If measured value is not within standard, adjust tape speed adjustment VR (shown in electrical parts location), so that frequency becomes 3,000Hz.  Fig. 3

ELECTRICAL PARTS LOCATION



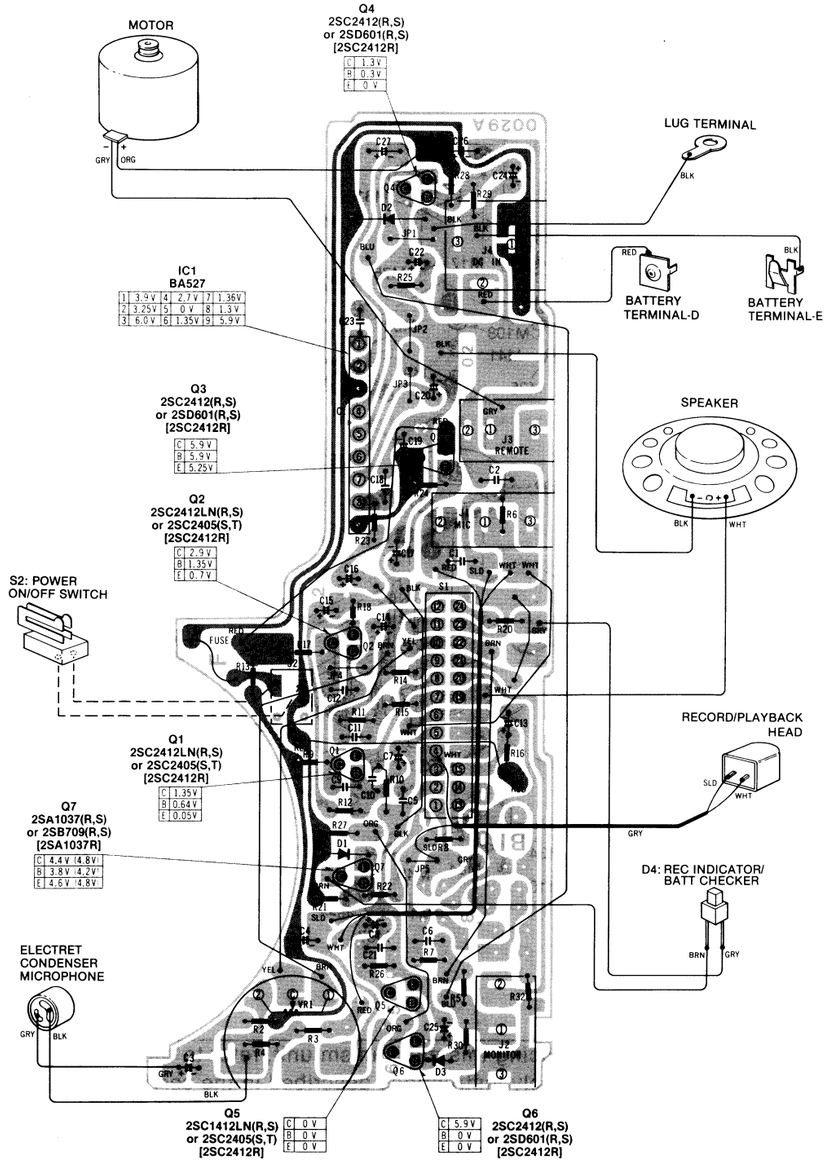




REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
	ELECTRICAL PARTS		E8	QGT1498	Volume Knob
			E9	XTN2+6BFZ	Tapping Screw ⊕2×6
E1	QWY0120Y	Record/Playback Head	E10	EAS45P106S	Speaker
E2	QWY2141	Erase Head			
E3	QKJA0037	Jack Sheet (for J1 and J2)	E11	QMA4354	P.C.B. Holding Plate
E4	QGAA0028	Insulating Sheet	E12	XSN2+4	Screw ⊕2×4
E5	WM034Z	Built-in Microphone	E13	XWC2B	Washer 2φ
E6	QBG1725	Microphone Rubber	E14	XQN2C3FN	Screw ⊕2×3
E7	QKJA0036	LED Holder			

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

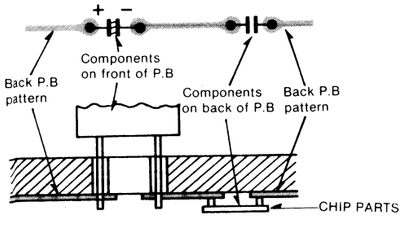


NOTES:

BLK ..... Black
BLU ..... Blue
BRN ..... Brown
GRY ..... Gray
GRN ..... Green
L BLU ... Light Blue
NIL ..... No Color Mark
ORG ..... Orange
PNK ..... Pink
RED ..... Red
SLD ..... Shield Wire
VLT ..... Violet
WHT ..... White
YEL ..... Yellow

NOTES:

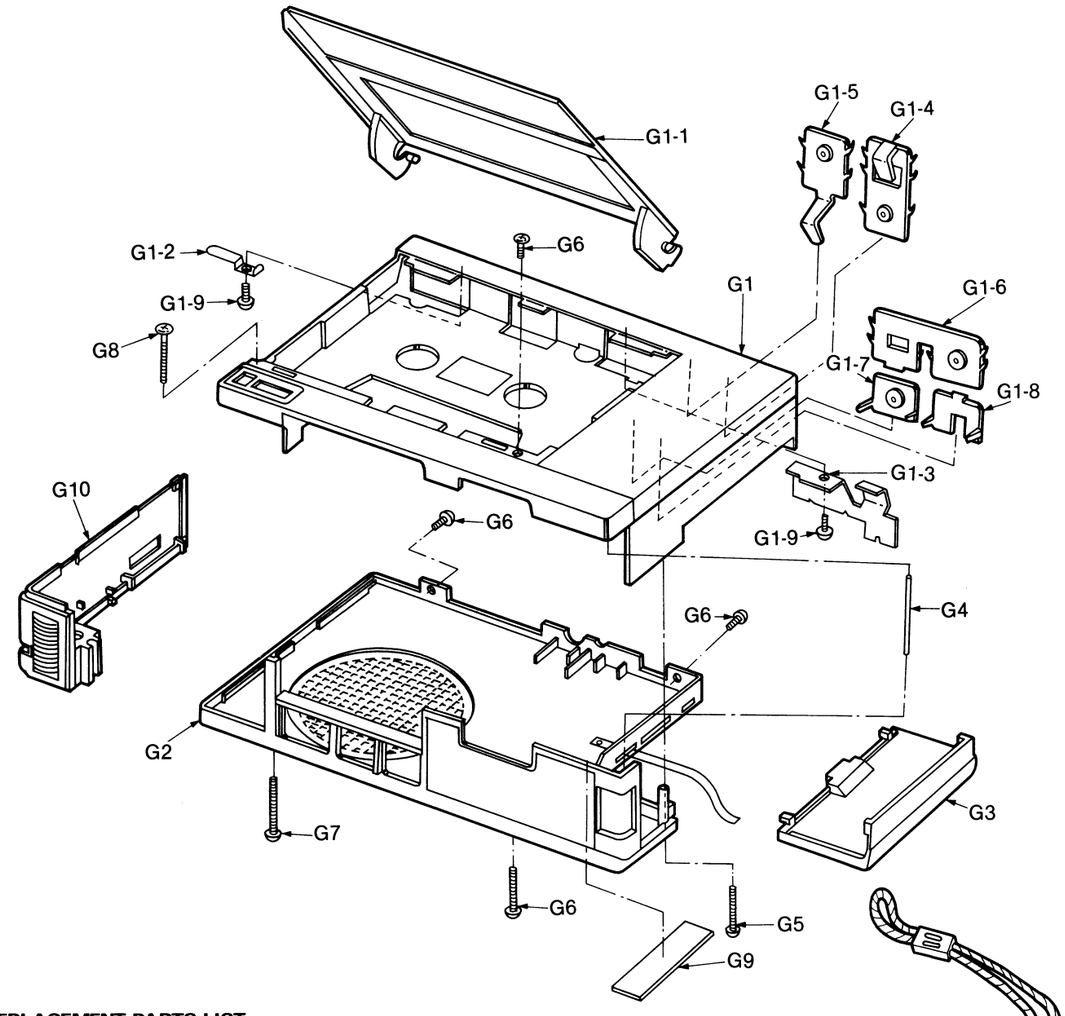
- The circuit shown in ▬ on the conductor is B+ (bias) circuit.
- The circuit shown in ▬ on the conductor indicates printed circuit on the back side of the printed circuit board.
- Black pattern represents tack of P.B (chip side).
- Components on front of P.B are identified by black symbols.
- Components on back of P.B are identified by green symbols.



- Values indicated in [ ] are under no signal condition and record mode with volume control at minimum position.
  However, the voltage in playback mode is indicated in ( )when it differs from that in record mode.
  For measurement, use VTVM.
- Described in the circut board diagram are two type of numbers; the supply parts number and production parts number for transistors.
  One type of number is used for supply parts number and production parts number when they are identical.
  e.g. Q1, 2
  2SC2412LN(R,S)——Production parts number
  or 2SC2405(S,T)
  [2SC2412R]——Supply parts number
- **The supply parts number is described alone in the replacement parts list.**

• This circuit board diagram may be modified at any time with the development of new technology.

CABINET PARTS LOCATION



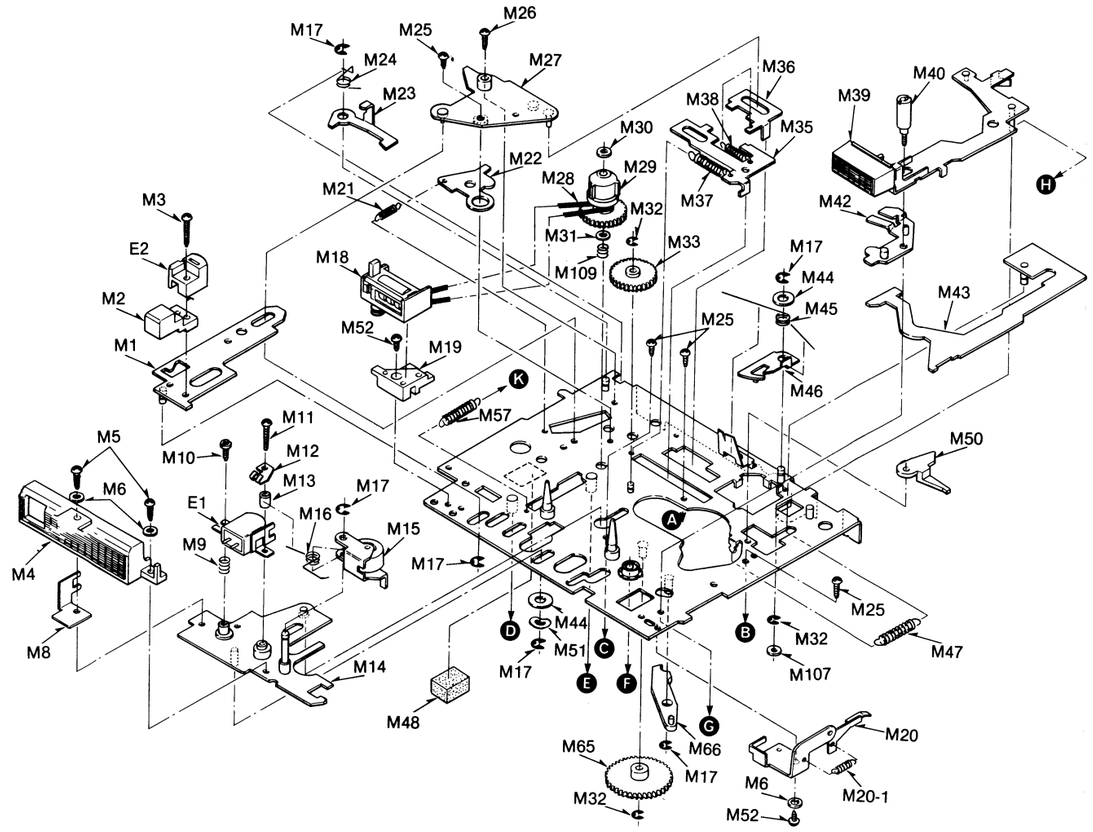
REPLACEMENT PARTS LIST

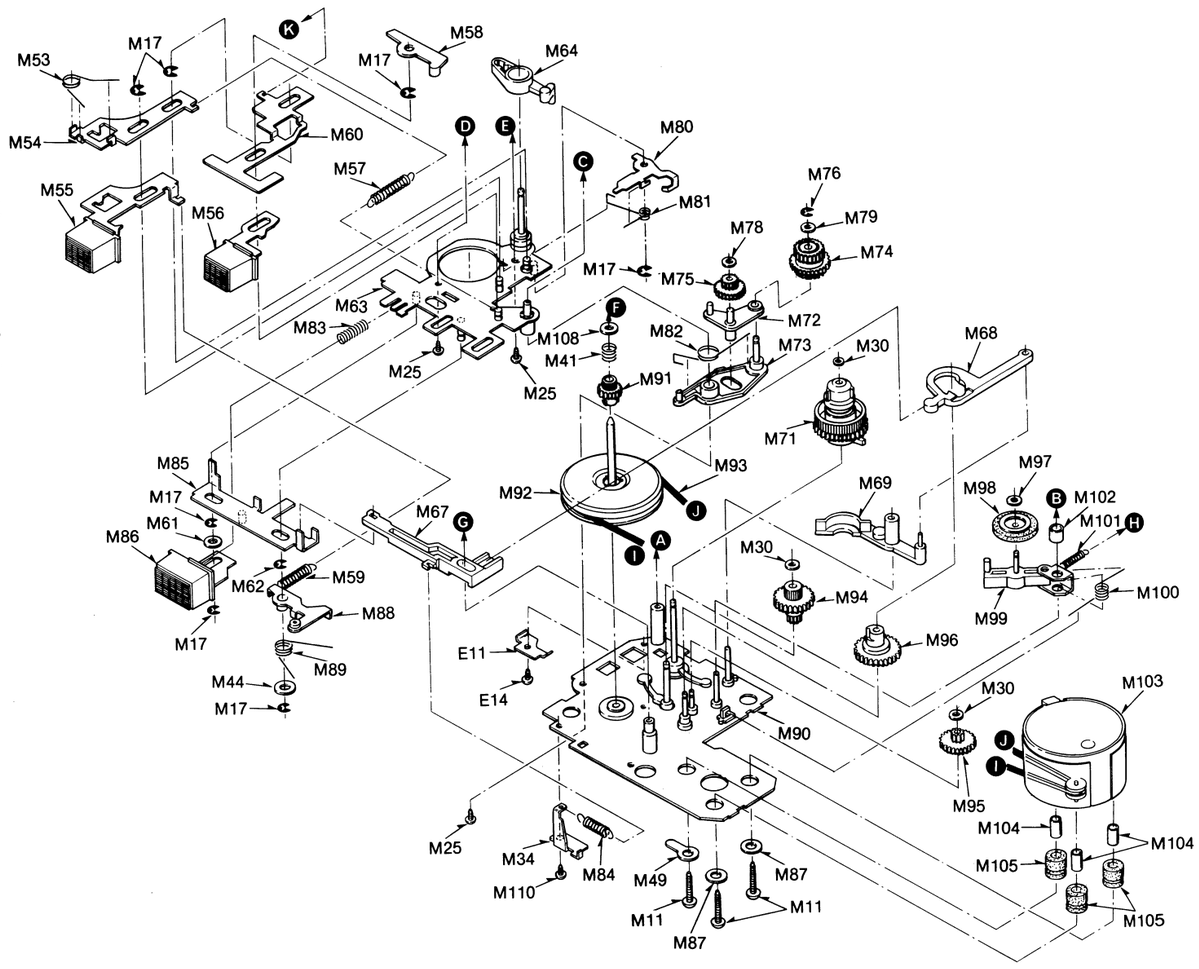
Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
		CABINET PARTS
G1	DE QYMA0156B	Main Case Assembly
	※For all European areas.	
	A QYMA0146B	"
	※For Australia.	
G1-1	QYFA0035B	Cassette Lid Assembly
G1-2	QBP1377	Lid Holding Spring
G1-3	QBP1941	Lid Spring
G1-4	QJB0152	Battery Terminal-A
G1-5	QJB0153	Battery Terminal-B
G1-6	QJB0154	Battery Terminal-C
G1-7	QJB0155	Battery Terminal-D
G1-8	QJB0156	Battery Terminal-E
G1-9	XTN2+6BFZ	Tapping Screw ⊕2×6
G2	DE QYMA0157B	Bottom Case Assembly
	※For all European areas.	
	A QYMA0147B	"
	※For Australia.	
G3	QKFA4001B	Battery Cover
G4	QMN2707	Handstrap Pin
G5	XTS2+20BFZ	Screw ⊕2×20
G6	XSS2+6BV	Screw ⊕2×6
G7	XSN2+18BV	Screw ⊕2×18
G8	XSN2+14BV	Screw ⊕2×14
G9	QGSA0067	Main Name Plate
G10	QJAA0014	Side Panel
		ACCESSORIES
A1	D QQT3167	Instruction Book
	※For all European areas.	
	(Only for commodities of non-included AC adaptor type.)	
	E QQT3166	"
	※For all European areas.	
	(Only for commodities of included AC adaptor type.)	
	A QQT3122	"
	※For Australia.	
A2	QFKA0056	Carrying Bag
A3	QYH0102K	Handstrap Assembly
A4	DE XEH15A1D	Earphone
	※For all European areas.	
A5	D ⚠ RD9477XG	AC Adaptor
	※For all European areas.	
	(Only for commodities of included AC adaptor type.)	

Ref. No.	Part No.	Part Name & Description
		PACKINGS
P1	D QPKA0036	Inside Carton Assembly
	※For all European areas.	(with Cushion)
	(Only for commodities of non-included AC adaptor type.)	
	E QPKA0035	"
	※For all European areas.	
	(Only for commodities of included AC adaptor type.)	
	A QPKA0030	"
	※For Australia.	
P2	XZB16X27A02	Poly Bag (for UNIT)
P3	D QPAA0065	Pad
	※For all European areas.	
	(Only for commodities of non-included AC adaptor type.)	
	E QPAA0067	"
	※For all European areas.	
	(Only for commodities of included AC adaptor type.)	
	A QPAA0065	"
	※For Australia.	

MECHANICAL PARTS LOCATION





REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description
		MECHANICAL PARTS
M1	QXK2530	Erase Head Base Plate Assembly
M2	QGO1930	Record Button
M3	XSN2+10	Screw ⊕2×10
M4	QGO1929	Playback Button
M5	XSN2+5	Screw ⊕2×5
M6	XWA2B	Washer 2φ
M8	QMG0101	Tape Guide
M9	QBC1339	Head Spring
M10	XSBQ2D45	Head Adjustment Screw
M11	XSN2+8	Screw ⊕2×8
M12	QTD1300	Wire Clamper
M13	QMC0142	Head Collar
M14	QXK2528	Head Base Plate Assembly
M15	QXL1455	Pressure Roller Lever Assembly
M16	QBN1869	Pressure Roller Lever Spring
M17	XUC2FT	Stop Ring 2φ
M18	QDC0129	Tape Counter
M19	QMZ1279	Counter Table
M20	QXK2534	Head Base Plate Holding Angle Assembly
M20-1	QBT1898	Eject Lever Spring
M21	QBT1902	Record Rod Spring
M22	QML3623	Record Rod
M23	QML3803	Erase Safety Metal
M24	QBN1871	Erase Safety Metal Spring
M25	XQN16B3FZ	Screw ⊕1.6×3
M26	XQN16B5FZ	Screw ⊕1.6×5
M27	QMH2080	Rod Holder
M28	QDB0310	Counter Belt
M29	QXD0116	Supply Reel Table Assembly
M30	QBW2008	Snap Washer
M31	QBKA0006	Washer
M32	XUC15FT	Stop Ring
M33	QDG1212	Gear (8)
M34	QMA4294	Lock Plate Spring Angle
M35	QMR1939	Record Switch Rod-A
M36	QMR1940	Record Switch Rod-B
M37	QBT1904	Switch Rod Spring-A
M38	QBT1905	Switch Rod Spring-B
M39	QXR0777	Pause Rod Assembly
M40	QMP1822	Pause Rod Guide-B
M41	QBC1406	Capstan Spring
M42	QXL1427	Pause Lever Assembly
M43	QXR0755	Eject Rod Assembly
M44	XWE3A7	Poly Washer
M45	QBN1872	Pause Lock Plate Spring
M46	QML3626	Pause Lock Plate
M47	QBT1926	Eject Rod Spring
M48	QBMA0012	Speaker Cushion
M49	QTDA0004	Lug Terminal
M50	QML3638	Auto Safety Lever
M51	QBP1519	Spring Washer
M52	XSN2+3	Screw ⊕2×3
M53	QBN1765	Head Base Plate Spring
M54	QMR1852	Playback Rod
M55	QXB0751	Rewind Button Assembly
M56	QXB0752	Fast Forward Button Assembly
M57	QBT1900	Playback Rod Spring
M58	QML3635	Cue Lever-B
M59	QBT1906	Rewind Rod Spring
M60	QMR1947	Fast Forward/Rewind Rod
M61	QBJA3025	Washer
M62	XUC25FT	Stop Ring
M63	QXH0382	Button Holder Assembly
M64	QML3804	Switch Lever
M65	QDG1255	Gear (2)
M66	QML3857	Idler Driving Lever
M67	QMR1949	Lock Release Rod
M68	QML3632	Auto-Stop Detection Lever-B
M69	QXL1374	Auto-Stop Detection Lever-A
M71	QXD0115	Takeup Reel Table Assembly
M72	QXL1377	Fast Forward Lever-A Assembly
M73	QXL1378	Fast Forward Lever-B Assembly
M74	QXG1049	Fast Forward Gear Assembly
M75	QDG1210	Gear (6)
M76	XUC12FT	Stop Ring 1.2φ
M78	QBW2010	Washer
M79	QBJA3014	〃
M80	QML3648	Gear Lever
M81	QBN1870	Gear Lever Spring
M82	QBN1764	Fast Forward Lever Spring
M83	QBC1377	Stop Button Spring
M84	QBT1901	Lock Plate Spring
M85	QXR0776	Lock Plate Assembly
M86	QXB0750	Stop Button Assembly
M87	XWE2A7	Washer
M88	QXL1375	Cue Lever-A Assembly
M89	QBN1763	Cue Lever Spring
M90	QXK2532	Lower Base Plate Assembly
M91	QDG1205	Gear (1)
M92	QXF0179	Flywheel Assembly
M93	QDB0283	Flywheel Belt
M94	QDG1207	Gear (3)
M95	QDG1208	Gear (4)
M96	QDG1209	Gear (5)
M97	QBW2030	Washer
M98	QXi0114	Takeup Idler Assembly
M99	QXL1387	Idler Lever Assembly
M100	QBN1762	Idler Spring
M101	QBT1903	Pause Lock Spring
M102	QMC0106	Collar
M103	HCi5S6RAK	Motor
M104	QMC0141	Motor Collar
M105	QBG1727	Motor Rubber
M107	QBW2042	Washer
M108	QBJ3098	〃
M109	QBCT0010	Back Tension Spring
M110	XQN2C3FN	Screw

When servicing this mechanism unit, refer to the disassembly notes and assembly instructions described in the service manuals of RQ-335, RQ-335A and RQ-337 (RQ-335 mechanism series).

SPECIFICATIONS

Pressure of pressure roller	300±50 g
Takeup tension * Use cassette torque meter ··· QZZRKCT	40^{+15}_{-10} g-cm
Wow and flutter: JIS * Use test tape ··· QZZCWAT	Less than 0.48% (RMS)

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